

Chapter 8--ALARA Plan

Overview The BUS Division As-Low-As-Reasonably-Achievable (ALARA) Radiation Plan is provided as policy and guidance to Division personnel on the issue of radiation exposure prevention and protection.

In this chapter The following information is found in this chapter:

| Topic | See Page |
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| BUS Division ALARA Radiation Plan | 8-1-1 |

Section 1 -- BUS Division ALARA Radiation Plan

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| Introduction | The purpose of the BUS Division ALARA Radiation Plan is to provide guidance to Division personnel on implementing and evaluating the BUS Division ALARA concepts and plan and to those employees who have incidental involvement with radioactive materials. |
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| Policy | Any involvement with or exposure to radioactive material must be kept as low as reasonably achievable. Worker exposure will be minimized to the greatest extent possible while still accomplishing the required tasks in a cost-effective manner. |
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| Definition: As Low As Reasonably Achievable (ALARA) | <u>ALARA</u> is a radiation protection guideline for keeping individual and collective radiation exposures (in the work force and general public) as low as social, technical, economic, practical, and public policy considerations permit. |
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| Definition: controlled area | A <u>controlled area</u> is any area to which access is controlled in order to protect individuals from exposure to radiation and radioactive materials. |
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| Definition: radiation worker | A <u>radiation worker</u> is an employee whose job assignment requires unescorted access to a radiological area, operation of radiation-producing devices, or working with radioactive materials or who is likely to receive above 0.1 rem (0.001 sievert) per year from external radiation. |
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| Definition: uncontrolled area | An <u>uncontrolled area</u> is an area that is essentially free of radioactive contamination and radiation fields, to which access is not controlled as a result of radiation. |

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BUS Division ALARA Radiation Plan, Continued

In this section This section contains the following topics:

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| Responsibilities in the ALARA Plan | |
| Reportable Readings, Records, and Training for ALARA | |

Responsibilities

ALARA Coordinator

The ALARA Coordinator is required to assist line management and supervisory personnel in carrying out the ALARA plan and concepts in the facilities operated by BUS Division. The ALARA Coordinator is responsible for

- Serving as the Division's primary ALARA focal point and maintaining knowledge of available resources for ALARA activities;
- Ensuring that all Division employees understand the ALARA concepts and techniques for their implementation in the workplace;
- Systematically identifying all possible sources of ionizing radiation;
- Ascertaining monitoring or data collection requirements that might be necessary to evaluate potential exposures within the Division;
- Ensuring implementation of any required monitoring;
- Regularly reviewing available data as it relates to possible exposures (e.g., personnel dosimetry results, air sampling data, wipe test results, contamination incident reports, stack sampling data, special sampling results);
- Identifying, investigating, documenting, ensuring corrective actions, and providing follow-up as appropriate when the following occur:
 - Any unusual or unexpected data results;
 - Increased exposure trends;
 - Highly exposed individuals within the exposed population; and
 - Special dosimetry requirements (internal/external);
- Implementing a facility-wide ALARA awareness program, including ensuring awareness of prenatal radiation exposure limits;

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Responsibilities, Continued

**ALARA
Coordinator,**
continued

- Ensuring that ALARA is included, as appropriate, in the following activities:
 - Training/orientation/indoctrination;
 - Routine and nonroutine operations;
 - New and modified facility/equipment design;
 - Emergency response planning/procedures; and
 - Facility maintenance;
 - Coordinating Division ALARA efforts with ESH Division staff; and
 - Performing other related tasks (e.g., setting numerical quantitative and qualitative exposure goals, performing statistical analyses of exposure data, providing cost-benefit analyses, performing independent ALARA audits, taking special consideration of high-exposure jobs, and performing inspections to identify the nonproductive, low-level exposures).
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Line managers

Line management has the overall responsibility to ensure that the BUS Division ALARA plan is effective.

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Responsibilities, Continued

Supervisors

All supervisors are responsible for the following:

- Identifying all possible sources of potential hazardous exposures involved in an operation;
 - Determining and implementing data collection requirements that are necessary to evaluate potential hazard exposures;
 - Regularly reviewing the collected data as it relates to possible exposures;
 - Ensuring that potential exposures do not exceed allowable limits, that there is an off-setting benefit to be gained for any exposure that may occur, and that exposures will be maintained as low as reasonably achievable;
 - Ensuring that all personnel involved in operations that are potentially hazardous due to radiation are properly trained to perform assigned tasks, to utilize the required safety equipment, and to attempt to prevent their exposure from exceeding ALARA standards; and
 - Coordinating operations with the appropriate building manager to ensure that facility-wide ALARA requirements are addressed.
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Employees

All Division employees are responsible for following the procedures defined in the Laboratory's Safe Operating/Special Work Procedures, as well as all other good practices to minimize exposures. All employees are encouraged to make and document suggestions on how to reduce exposure. Workers are only responsible for carrying out those operations/activities that they have been properly trained to do and for using the appropriate safety equipment.

Reportable Readings, Records, and Training for ALARA

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| Reportable readings | <p>If a Division employee's dosimetry badge or device reading during any monthly reporting period is .05 rem or above or .2 rem in a consecutive 12-month period, the incident will be referred to the BUS Division ALARA Coordinator for review and corrective action.</p> |
| Records | <p>Documentation of ALARA activities shall be maintained by the ALARA Coordinator in an auditable file. ALARA records shall be treated as controlled documents and shall be audited to ensure that only current documents are in use.</p> |
| Training | <p>All BUS Division personnel who are involved in activities that could expose them to potentially hazardous agents are to be trained on the ALARA requirements for the specific activities. ALARA training is also provided on the contents of this plan as a part of the Laboratory's general ES&H/QA training program.</p> <p>The Radiation Protection for Occupational Workers training course is required for all Laboratory employees and contractors, to enhance safety awareness and to further ensure that BUS Division worker exposure to radiation remains as low as reasonably achievable. The ESH-13 Training Center provides additional radiation safety training to employees, to be commensurate with an employee's job assignment.</p> |

References and Contacts

Document references

The following documents may be used as references:

- Los Alamos National Laboratory Radcon Manual;
 - BUS Safety Plan;
 - BUS Quality Plan;
 - LS 107-08.0, Radiological Administrative Control Levels; and
 - 10 CFR 835, Occupational Radiation Protection.
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Administrative Requirement references

The following *Los Alamos Environment, Safety and Health Manual's* Administrative Requirements may be used as references:

- AR 1-3, Safe Operating Procedures and Special Work Permits;
 - AR 1-5, Health, Safety, and Environment Appraisals;
 - AR 1-6, Safety Analysis and Review System;
 - AR 3-1, Radiation Protection Program;
 - AR 3-2, Radiation Protection Exposure Standards;
 - AR 3-7, Radiation Exposure Control Requirements; and
 - AR 3-9, Radiation Protection Training Requirements.
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Contacts

The following organizations may be contacted for more in-depth ALARA information:

- Health Physics Operations (ESH-1), 7-7171;
 - Occupational Medicine (ESH-2), 7-7251;
 - Facility Risk Assessment (ESH-3), 7-3363;
 - Industrial Hygiene (ESH-5), 7-5231;
 - Nuclear Criticality Safety (ESH-6), 7-4789;
 - ES&H Training (ESH-13), 7-0059;
 - Radioactive Air Emissions Management (ESH-17), 5-8855;
 - Hazardous and Solid Waste (ESH-19), 7-0666;
 - Radiation Protection Office (ESH-DO), 7-5296; and
 - Material Control and Accountability (FSS-12), 7-5886.
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